In groups of around 5 attempt the completion of the specification outlined – the assignment is large but you have the class time until Tuesday afternoon to work towards your solution. The system design, code and presentation should be prepared for Tuesday afternoon. Do not rush it try to utilise what we have used so far and explore around the subject. It is intended that you use the hours allotted to carry out and document the tasks. You are free to use any mechanisms in the language but should explain the choices clearly. Your code should be well documented and relate to your design. All members of the group should be involved in the presentation.

Bank Simulation

The AGROUP bank corporation has recently completed some restructuring. They have several customer accounts and new products.

The bank offers different groups of products some of them are listed below.

Savings & Deposits	**Cards**
Current Account	
Junior Account	Cash/Cheque Guarantee Card
Corporate Savings	
Student Savings	Credit Card
Lending & Leasing	**Investments**
Personal Loans	General Fund Investment
Corporate Loans	European Fund Investment
Mortgages	Pension Plan

Each customer can apply for any products available, but subject to specific conditions attached to the products.

Although all four products within the product group of Savings and Deposits are customer accounts that have many characteristics in common, they have some differences in the rules. For example, the Junior Account is a kind of savings account but only for people under 16 years of age. A junior current account must be opened with the consent of a legal guardian. The account is solely held by one junior person, the legal guardian is responsible for any consequences caused by the use of the account. Tax exemption is applicable. Corporate Savings are for business users, which normally have higher limits of overdraft, though interest rates and cheque charges may be different to other current and savings accounts. Student Savings accounts have a higher interest rate for saving and a lower interest rate than a Current Account for borrowing.

Within the Lending and Leasing product group there are Mortgages.
Examples of these include fixed rate mortgages, discounted mortgages
(1.2 % less than the current base rate for a period of 2 years, then
switch to the base rate which is 5%)
Buy to Let mortgages at an interest of 7.35%.

Each mortgage has:
A Loan to Value limit (e.g. 80% of cost of property)
An associated interest rate
An application fee
A repayment penalty if the loan is paid off in advance of the full term

Cashiers are available at each branch for carrying out transactions on
Customers accounts. All transactions are carried out using a computer
System. The date time and type of transaction are all recorded in a
Transaction Log. The manager of the bank has special access to the
Transaction Log.

Procedure for Mortgage application:

The customer is interviewed by a mortgage arranger. Personal details are entered into a
computer system which can access information in external computer systems. The
information accessed provides examples of products offered by external companies. If the
customer chooses an external product in preference to the Bank then the Bank obtains an
introduction fee from the external company, this request for a fee will be noted but connection
to external companies is outside the current scope of the application. The customer is
provided with a sample report which lists a recommended insurance product together with the
mortgage and payments per month over the first 2 years of the mortgage term. This is
followed by a projected payment per year over the mortgage term. The customer pays a fee for
the arrangement and for the necessary survey to be carried out, payment of this fee will be
recorded.

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**Savings and deposits section - partial design – you can change this completely if you wish
this is only a sample to get you started:**

Classes
Customer
Responsibilities: addNewCustomer, showPersonDetails, updatePersonDetails
Collaborators: Account
Attributes: name, address, tel no., sex, DoB

Account

Responsibilities: OpenAccount, CloseAccount, ShowBalance, AddAmountToBalance,
SetInterestRate, SetCreditLimit
Collaborators: Customer, Transaction
Attributes: accoutNumber, Balance, CreditLimit, AccountType

CurrentAccount
Responsibilities:{inherit from Account}
Collaborators: {inherit from Account}
Attributes: :{inherit from Account}

JuniorCurrentAccount
Responsibilities: {inherit from Account}
Collaborators:{inherit from Account}
Attributes: :{inherit from Account}

Transaction
Responsibilities: Deposit, Withdraw, Transfer, Authenticate
Collaborators: Customer, Acount
Attributes: Amount, TransactionTime

Sample Class model:
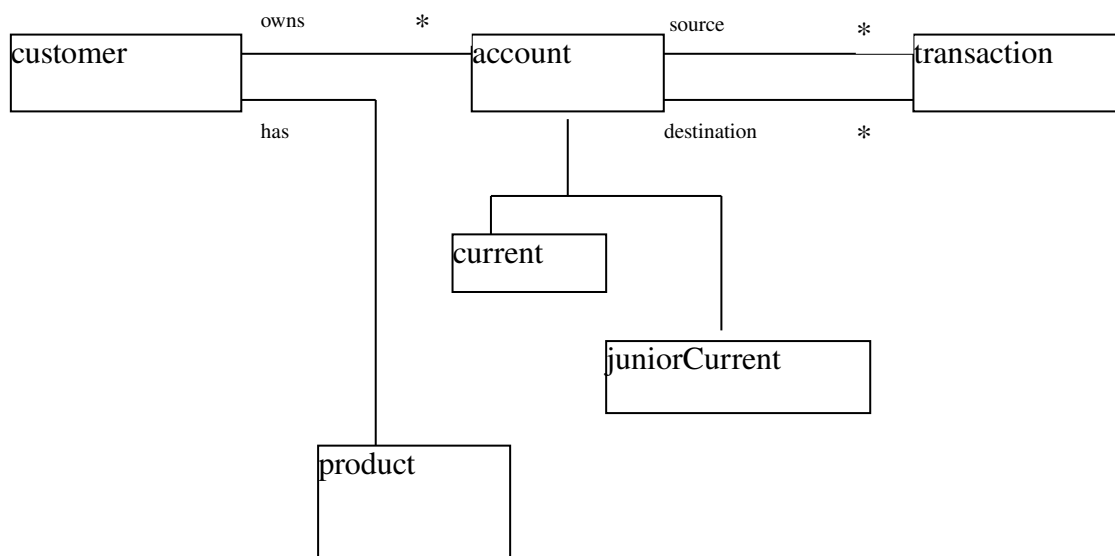
Provide code to implement the functionality of the Savings and Deposits
Product group and the Mortgage Lending and leasing with particular emphasis
on the mortgage application. The following functionality should be attempted

(i)   A new customer is entered
(ii)   New accounts are set up and deposits, withdrawals and queries made
(iii)   List all customers and their account balances
(iv)   A customer has a new mortgage account set up
(v)   List all accounts a particular customer has.
(vi)   Delete an account

(vii)   Remove a customer from the system

(viii)   Manager's access to a transaction log

Add additional classes to the class model (eg Bank employees and mortgage accounts) as required.

IMPORTANT NOTE: **In some instances the specification may be loose and subject to interpretation. In such cases make your assumptions clear in the documentation**